



# SOLVAY SODA ASH JOINT VENTURE

June 24, 1997

Bernie Dailey  
WDEQ-Air Quality Division  
122 West 25th Street  
Cheyenne, WY 82002

RE: Air Quality Permit Application AP-W77

Dear Bernie:

This letter is in reply to your questions concerning Solvay Soda Ash Joint Venture's (SSAJV) Air Quality Permit Application AP-W77.

## **LIFTERS:**

The existing calciners are equipped with lifters, dams, and cells to increase heat transfer efficiency. The proposed expansion calciner (AQD #80) will also be equipped with lifters, dams, and cells.

## **MINERS:**

The borer miners in use at the SSAJV mine do not allow for adjustable height. However, the trona seam currently being mined is approximately 12 feet thick. The miner mines a thickness of 9 feet, leaving a layer of trona both on the roof and the floor, avoiding mining the underlying and overlying oil shale. It is advantageous, not only from an environmental perspective, but also for safety and operational reasons to avoid mining the shale. For conventional room and pillar mining in which the roof is bolted for support after mining has taken place, the roof is more stable when a layer of trona is left. As for operations, the hauling, processing, and disposing of the shale is extremely uneconomical, and causes upsets during the processing of the trona. There are organics inherent in the ore body itself, which are processed with the trona. By 1999, SSAJV will install a longwall mining system with the ability to adjust the height from 7 to 10 feet. Again, the miner will avoid extracting oil shale as much as reasonably possible. This miner will not replace the existing borer miners, it is an additional continuous mining system.

## **NO<sub>x</sub>:**

In reviewing North American Mfg. Co.'s (NAMCo) emission estimates of the Magna Flame LE burner installed on AQD #s 17 and 48, it was noted that at the higher temperature (2600° F) required to run the unit at its design capacity of 200 MM Btu/hr, the emission rate will be 0.06 lb NO<sub>x</sub>/MM Btu, rather than the 0.05 lb NO<sub>x</sub>/MM Btu rate at lower firing rates (2400° F burner temperature). Through testing the unit at design

capacity, it has been shown that the unit does perform at approximately 0.06 lb NO<sub>x</sub>/MM Btu, as NAMCo guarantees. At 0.06 lb NO<sub>x</sub>/MM Btu, the revised PPH NO<sub>x</sub> emission rates of AQD #s 17 and 48 will be 15 and 30 PPH (65.7 and 131.4 TPY), respectively.

- **BACT:** The NAMCo Magna Flame LE Burners installed on AQD #s 17 and 48 are the lowest NO<sub>x</sub> emitting burners currently installed on a calciner in the trona industry. No other burner appropriate for a trona calciner has been commercially demonstrated with lower NO<sub>x</sub> emissions. Since installation of the existing burners, NAMCo has made further improvements to the design of the Magna Flame LE Burner. These changes will allow the newer burner design, which will be installed on the proposed expansion calciner (AQD #80), to be rated at 0.05 lb NO<sub>x</sub>/MM Btu, at the design firing rate of 400 MM Btu/hr.
- **AMBIENT IMPACT:** The ambient impacts due to the increase in expected NO<sub>x</sub> emissions at the 0.06 lb NO<sub>x</sub>/MM Btu rating have been assessed, as noted in the revised tables below. Copies of this information are enclosed on computer disk.

**Table 6-1: Maximum Impacts from Emissions Due to Expansion - Revision 1**

Pollutant	Averaging Period	Year	Modeled Impacts (µg/m <sup>3</sup> )	Significant Impact Level (µg/m <sup>3</sup> )	de minimis Monitoring Level (µg/m <sup>3</sup> )
NO <sub>x</sub>	Annual	1987	1.51	1	14
		1988	1.86	1	14
		1989	1.6	1	14
		1990	1.42	1	14
		1991	1.50	1	14

**Table 6-2: NAAQS/WAAQS Compliance Demonstration - Revision 1**

Pollutant	Averaging Period	Year	SSAJV Impact (HSH) (µg/m <sup>3</sup> )	Monitored Impact (µg/m <sup>3</sup> )	Cumulative Impact (µg/m <sup>3</sup> )	AAQS (µg/m <sup>3</sup> )
NO <sub>x</sub>	Annual	1987	33.1	3	36.1	100
		1988	37.0	3	40.0	100
		1989	38.2	3	41.2	100
		1990	36.3	3	39.3	100
		1991	40.1	3	43.1	100

**Table 6-7: Summary of Maximum Acid Deposition Results - Revision 1**

Name	Annual Modeled NO <sub>x</sub> Impact (µg/m <sup>3</sup> )	Lake Baseline ANC (µeq/L)	Δ ANC (Percent)	Δ pH
<b>Black Joe Lake</b>	0.00131	46	0.728	0.0032
<b>Deep Lake</b>	0.00137	40	0.875	0.0038
<b>Hobbs Lake</b>	0.00099	57	0.444	0.0019
<b>Ross Lake</b>	0.00074	51	0.371	0.0016
<b>Saddlebag Lake</b>	0.00152	28.4	1.367	0.0060
<b>Klondike Lake</b>	0.00084	20	1.073	0.0047
<b>Upper Titcomb Lake</b>	0.00091	34	0.684	0.0030

NOTE: These results do not take into account the PSD netting of NO<sub>x</sub> emissions.

**EXHAUST VOLUMES (SCFM):**

The standard cubic feet per minute (scfm) exhaust volumes of the proposed sources were reported in the permit application at conditions of 32° F and 29.92 inches Hg. Per Wyoming Air Quality Standards and Regulations Chapter 1 Section 2(a)(xxxviii), standard conditions are defined as 68° F and 29.92 inches Hg. The scfm exhaust volumes have been recalculated at 68° F and are noted in the table below:

AQD #	scfm
74	4,025
75	4,025
76	43,500
77	2,625
78	3,225
79	2,425
80	138,400
81	20,600
82	75,500
83	3,360
84	6,975

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**CO AND VOC BACT ANALYSIS:**

I am currently conducting a thorough BACT analysis for controlling CO emissions on the proposed expansion calciner (AQD #80), and analyzing a wet ESP for controlling VOC emissions on AQD #80 as well. The results of the analyses will be forwarded to your office when complete.

If you have any further questions, do not hesitate to contact me at (307) 872-6571. Or, if it would be useful, any time during the review of the permit application, I will meet with you in your office.

Sincerely,

A handwritten signature in black ink, appearing to read "Dolly A. Potter". The signature is fluid and cursive, with the first name "Dolly" being the most prominent.

Dolly A. Potter  
Environmental Engineer

**Enclosures**

cc: Lee Gribovicz with enclosure  
Ken Rairigh without enclosure